



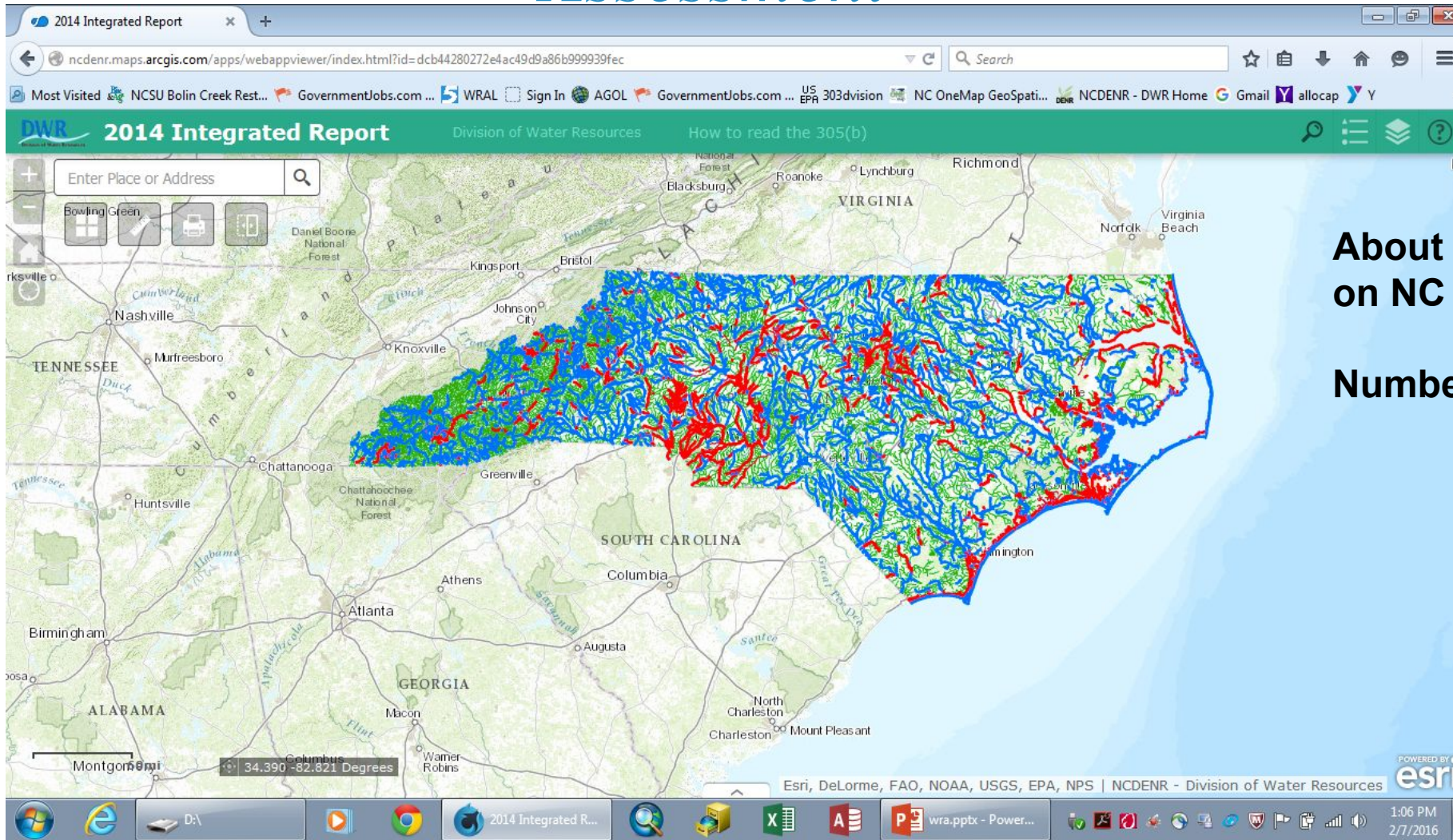
August 16, 2018

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Division of Water Resources
Modeling and Assessment*



North Carolina Water Quality Assessment



About 1,100 waters
on NC 303d list

Number 1 listed parameter?

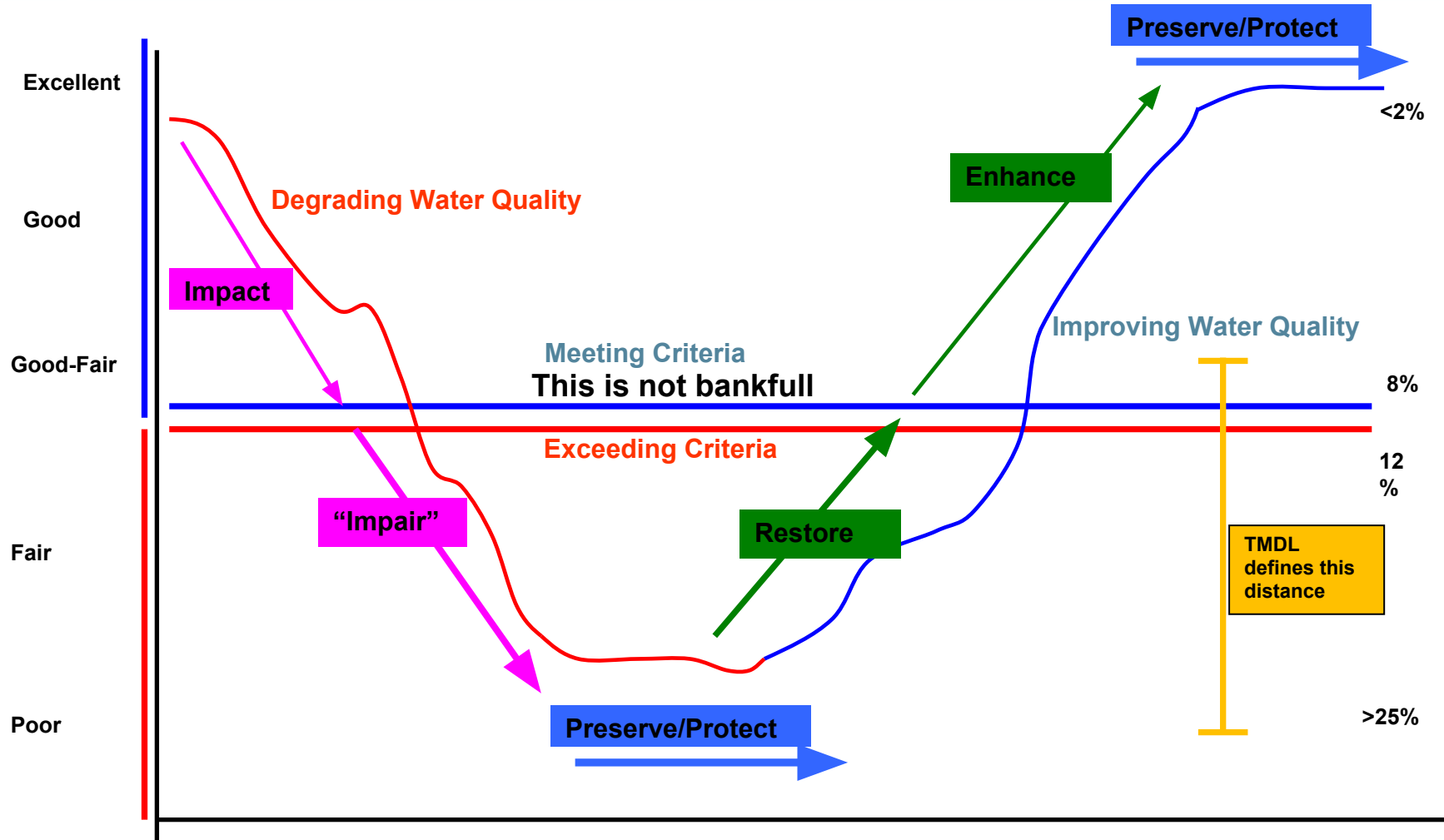
Nc 303d



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I make complicated diagrams

This usually takes 45 minutes to explain- you get 45 seconds



Restoration Plans Required

25 by 2022

Anyone done a restoration on a 303(d) listed stream?

How many 303(d) streams have been restored (delisted)?
deliberately



Two Problems

There are many more but that is for a different day



1. Restoration projects are at different scales than most monitoring
2. Watershed restoration plans are expensive- implementation is low

Picture of large 3-ring binder here-maps unreadable

Result- low interest, low engagement level

Self-building Plans

Live maps populated using apps

UT at Benson Road Watershed Action Plan

No issues detected × Story not shared × Edit × benthos restoration strategy

WAP BLOG- What's New?

May 8 2018- Combined all planning tools into a single application so that it can be easily added to other plans or referenced without multiple links

February 9, 2018 Added SCITS-Pro to the SCITS tool tab. Tool for use by trained field staff to identify and provide a relative rank of drainage area features that may contribute to degraded water resource conditions.

20171011- Added new version of FOATS that is easier to use. Also added "Tool" to the front of the name of all the tools available for WAP continued development and for Implementation Plan development. Tabs that start with IP are Implementation Plans.

20170927- Added plan phasing to the Goals and Objectives Report in tab 5 popup box

The Big Picture WAP Work Flow

DEQ maintains the map
Everyone else populates the data and information
Flexibility-adaptive management
Name the stream

DEQ(NewLogo) P....pptx ^

EcoStream.pptbc... Alternatives_nc...

7:53 PM 8/14/2018



Solutions

Apps, apps, apps

Work force engagement

Apps that require some knowledge and training
Get field staff and others involved in the mission
No paper please

Citizen Science-Stakeholder engagement

Apps that require little training and are short
k-12 (future champions and still alive after 45 years of implementation)

All the apps take a photo and geolocate- puts on dot on the map

Field Observations and Assessment Tracking

FOATS-please use this on your restoration sites. It's easy I promise

Change the scale- measure the problem and the solution at the same scale

Non-traditional parameters assessed

Livestock, fish passage, geomorphology, hydraulics, hydrology, riparian condition, protection, conveyances

Pictures are worth at least a 1,000 words

Use Annotate to mark up the pics

Easy way to capture before and after

before-cattle instream after- cattle on other side of fence

Accountability in CWA terminology- this helps me

4r Fish passage for Milburnie dam removal- 1r next assessment

If it's broke and you fix it -let everyone know

Water Resource Value Estimator

Need a better name for this



- **Calculates value of stream in current condition in \$/ft/yr**
- **Calculates value of stream in fully restored condition in \$/ft/yr**
- **People understand dollars way may than ecological uplift**
- **Return on investment**
- **Provides an interim measure of success by adding value to the stream even if not fully restored**



Form Preview

Schema Preview

Settings

Water Resource Value Estimator 20171111

Estimate a percent function in each functional area

Biological Function **40%**

Physical/Chemical Function **5%**

Hydrologic Function **20%**

Hydraulic Function **10%**

Geomorphology Function **5%**

Riparian Function **20%**

Estimate a percent function in each functional area after implementation

Biological Function

Percents based on the outcome value

WRVAL Example

Working acronym only

1,000 feet of stream in a project area potential value=103,000\$/yr

Current value of the stream=29,000\$/yr

Loss resource value=74,000\$/yr

Restore riparian function from 25% to 75% adds \$10,000/yr

Restore hydraulic function from 50% to 100% adds \$6,000/yr

ROI= 6.25 years

This method is published in a fiscal note and reviewed by economist who had no idea of what was going to do with it in the future—values are literature based (I am not an economist but I did sleep at the Four Points by Sheraton last night)

Citizen Science Apps

Tied into StreamWatch relaunch and Adopt-A-Stream

- 1. Trash Tracker-Count the bags of trash and take pic**
(gateway drug to champions)
- 2. Trash Surveyor- can the Cub Scouts do this clean-up?**
- 3. SCITS- Source and Conveyance Information Tracking**
(amateur and pro versions)
- 4. Macroinvertebrate survey (IWL)**
- 5. Stream Habitat Survey**
- 6. Water Chemistry Survey**

All apps are phone based –best used with Survey123 (free download)

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Stream Determinations

Non-regulatory version

Methodology for Identification of Intermittent and
Perennial Streams and Their Origins

Version 4.11

Effective Date: September 1, 2010

<https://arcg.is/Pfym1>

Take Home Messages

In no particular order

Engagement is what funds this whole enterprise

Show your work in **BOLD** and on a **MAP**

Riparian restoration is a carbon sink

Scale both spatially and temporally are important to communicate

Greenways near waters are good

Ecologist are economist in hip-boots

Expectations are generational

Money talks and bull feces walks (or floats downstream)

All the easy stuff is done- rivers do not burn anymore

Think globally act locally- for real. get small it's important